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18 UNITED STATES DISTRICT COURT
19 NORTHERN DISTRICT OF CALIFORNIA
20 SAN FRANCISCO DIVISION

21 INFINEON TECHNOLOGIES AG, a
22 German corporation,

Case No. CV-11-06239 (MMC) (DMR)

23 Plaintiff,
vs.
24 VOLTERRA SEMICONDUCTOR
25 CORPORATION, a Delaware corporation,
26 Defendant.

**PLAINTIFF INFINEON'S OPENING CLAIM
CONSTRUCTION BRIEF**

Date: May 19, 2014
Time: 9:00 AM
Dept.: Courtroom 7 - 19th Floor
Judge: Honorable Maxine M. Chesney

**REDACTED VERSION OF DOCUMENT
SOUGHT TO BE SEALED**

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TABLE OF CONTENTS

2	INTRODUCTION	1
3	OVERVIEW OF THE ASSERTED PATENT	1
4	STATEMENT OF THE LAW ON CLAIM CONSTRUCTION	2
5	VOLTERRA'S EXPERT TESTIMONY	4
6	ARGUMENT	5
7	I. "metal conductors"	5
8	A. The term "metal conductor" does not require construction because the term 9 should be given its plain and ordinary meaning—a metal that conducts	5
10	B. Volterra's proposed construction should be rejected because it improperly 11 imports limitations inconsistent with the plain meaning of "metal 12 conductor."	6
13	C. Dr. Szepesi's additional limitations should be rejected because they are 14 inconsistent with the '730 Patent and both sides' proposed constructions	7
15	1. The metal conductors are not limited to aluminum	7
16	2. The patentees did not disclaim any portion of the plain meaning of 17 "metal conductor" and certainly did not disclaim the use of UBM	9
18	II. "bump"	12
19	A. The term "bump" should be given its plain and ordinary meaning—a raised 20 metal contact	13
21	B. Volterra's proposed construction should be rejected because it improperly 22 reads a particular method of manufacture into the claims and is inconsistent 23 with the plain meaning of "bump."	13
24	C. Dr. Szepesi's additional limitations should be rejected because they are 25 inconsistent with the '730 Patent and both sides' proposed constructions	15
26	III. "frame"	16
27	A. The term "frame" should be given its plain and ordinary meaning, which is 28 a lead frame	16
29	B. Volterra's proposed requirement that the frame include "other portions for 30 connecting to a PCB" should be rejected because it is inconsistent with the 31 claim language and the specification of the '730 Patent	17

1	1. Volterra's construction is inconsistent with Claim 1.....	17
2	2. The specification does not redefine the term "frame" by lexicography or disclaimer to require "other portions for connecting to a PCB."	18
3		
4	IV. "connection portions".....	20
5		
6	A. The Court should adopt Infineon's proposed construction of "connection portion" because it is the only proposal that clarifies the scope of the claim.	20
7		
8	V. "interdigitated".....	22
9		
10	VI. "bumps on the first metal conductors are substantially aligned in first lines which extend in a second direction" and "bumps on the second metal conductors are substantially aligned in second lines which extend in the second direction"	23
11		
12	A. The Claim 5 limitations do not require any further construction.....	23
13		
14	B. Volterra's proposed construction should be rejected because it incorporates limitations inconsistent with the claim language and specification.....	23
15		
16	C. Dr. Szepesi's attempt to read into Claim 5 a requirement that the connection portions be aligned in the second direction is improper and inconsistent with both sides' constructions.....	25
17		
18	CONCLUSION.....	25
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		

1

2 **TABLE OF AUTHORITIES**

3

		Page(s)
4	CASES	
5	<i>AFG Industries, Inc. v. Cardinal IG Co.</i> , 375 F.3d 1367 (Fed. Cir. 2004).....	14
6	<i>Altiris, Inc. v. Symantec Corp.</i> , 318 F.3d 1363 (Fed. Cir. 2003).....	4
7	<i>Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.</i> , 340 F.3d 1298 (Fed. Cir. 2003).....	15
8	<i>Applied Signal Tech., Inc. v. Emerging Mkts. Comm., Inc.</i> , No. C 09-2180 SBA, 2011 WL 500786 (N.D. Cal. Feb. 9, 2011).....	23
9		
10	<i>CCS Fitness, Inc. v. Brunswick Corp.</i> , 288 F.3d 1359 (Fed. Cir. 2002).....	8
11		
12	<i>DESA IP, LLC v. EML Technologies, LLC</i> , 211 F. App'x 932 (Fed. Cir. 2007)	4
13		
14	<i>E-Pass Techs., Inc. v. 3Com Corp.</i> , 343 F.3d 1364 (Fed. Cir. 2003).....	11, 12
15		
16	<i>Epistar Corp. v. Int'l Trade Comm'n</i> , 566 F.3d 1321 (Fed. Cir. 2009).....	3, 10
17		
18	<i>In re Mouttet</i> , 686 F.3d 1322 (Fed. Cir. 2012).....	9
19		
20	<i>Interactive Gift Exp., Inc. v. Compuserve Inc.</i> , 256 F.3d 1323 (Fed. Cir. 2001).....	2
21		
22	<i>Kara Tech. Inc. v. Stamps.com Inc.</i> , 582 F.3d 1341 (Fed. Cir. 2009).....	3, 4, 9, 15
23		
24	<i>Liebel-Flarsheim Co. v. Medrad, Inc.</i> , 358 F.3d 898 (Fed. Cir. 2004).....	24
25		
26	<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005).....	1, 2, 4, 24, 25
27		
28	<i>Storage Tech. Corp. v. Cisco Sys., Inc.</i> , 329 F.3d 823 (Fed. Cir. 2003).....	12

1	<i>Superguide Corp. v. DirecTV Enters., Inc.,</i> 358 F.3d 870 (Fed. Cir. 2004).....	8
2		
3	<i>Teleflex, Inc. v. Ficosa N. Am. Corp.,</i> 299 F.3d 1313 (Fed. Cir. 2002).....	3
4		
5	<i>Thorner v. Sony Computer Entm't Am.,</i> 669 F.3d 1362 (Fed. Cir. 2012).....	3, 5, 7, 9, 10
6		
7	<i>Toshiba Corp. v. Imation Corp.,</i> 681 F.3d 1358 (Fed. Cir. 2012).....	3, 6
8		
9	<i>U.S. Surgical Corp. v. Ethicon, Inc.,</i> 103 F.3d 1554 (Fed. Cir. 1997).....	17, 21
10		
11	<i>Vanguard Products Corp. v. Parker Hannifin Corp.,</i> 234 F.3d 1370 (Fed. Cir. 2001).....	14
12		
13	<i>Vitronics Corp. v. Conceptronic, Inc.,</i> 90 F.3d 1576 (Fed. Cir. 1996).....	4, 24
14		
15	<i>Vivid Techs., Inc. v. Am. Science & Eng'g, Inc.,</i> 200 F.3d 795 (Fed. Cir. 1999).....	17
16		
17		
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INTRODUCTION

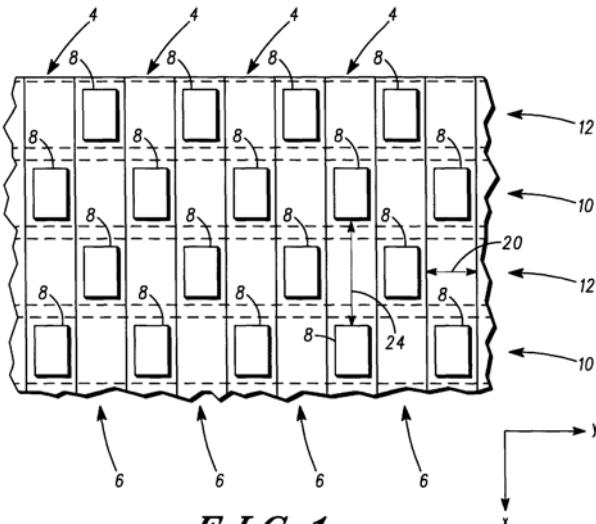
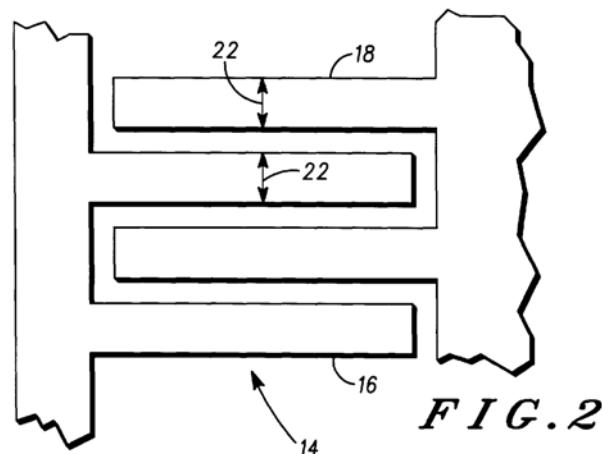
2 The key claim terms in dispute are simple and straightforward and should simply be given
3 their plain and ordinary meaning, as reflected in Infineon’s proposed constructions. Volterra
4 attempts to escape liability for its infringing products by ascribing narrow meanings to the broad
5 terms the patentees used in drafting the claims. To support its view, Volterra relies heavily on its
6 proffered expert Dr. Szepesi and on the examples described in the patent’s specification.
7 Volterra’s restrictive constructions violate the basic tenet of patent law that the claims—not the
8 example embodiments described in the specification or the testimony of a litigation expert—
9 define the scope of the patented invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed.
10 Cir. 2005) (en banc).

OVERVIEW OF THE ASSERTED PATENT

12 U.S. Patent No. 5,945,730 (“the ’730 Patent”) relates to a “semiconductor power device.”
13 Ex. 1, ’730 Patent, 1:1-5, 2:8-11. The patent primarily concerns packaging technology—how to
14 provide external electrical connections to the semiconductor device. Ex. 3, Ex. 3, Schaper Reb.
15 Decl. ¶ 1. One of the objectives of the invention is to reduce the resistance of the power device,
16 enabling the device to more efficiently handle applications requiring large amounts of electrical
17 current flowing through the device. ’730 Patent, 1:16-27, 1:56-58. In particular, the patent
18 explains that prior art devices made external connections using wire-bonds to pads along the
19 periphery of the device. ’730 Patent, 1:8-15. Because current has to flow the length of the
20 device, these devices have a high on-resistance. ’730 Patent, 1:16-19. By contrast, the invention
21 involves using bumps to form interconnection to a lead frame that extends over the
22 semiconductor die. *See, e.g.*, ’730 Patent, 2:46-50.

23 For example, Figures 1 and 2 illustrate preferred embodiments of the invention. The
24 device includes an array of bumps over the surface of the semiconductor die and a frame that
25 extends over the semiconductor die to connect to the bumps. Figure 1 depicts part of the
26 semiconductor die of a LDMOS power transistor, showing bumps arranged on metal conductors.
27 Figure 2 depicts part of the frame of the LDMOS power transistor. As shown in the figures
28 below, the frame has connecting portions (labeled 16 and 18) that align with the bumps (labeled

1 8) on the metal conductors of the device (labeled 4 and 6) when one is placed on top of the other.
 2 As a result, “[w]hen the LDMOS transistor device is assembled, the frame extends over the metal
 3 conductors 4 and 6 of the LDMOS transistor die so that the connecting portions 16, 18 are
 4 connected to the respective metal conductors via the respective bumps.” ’730 Patent, 3:13-17.

**FIG. 1****FIG. 2**

14 The specification teaches that this packaging technology, which connects a frame to bumps over
 15 the surface of the device rather than connecting wire-bonds to pads at the periphery, lowers the
 16 on-resistance of the device by reducing the distance that the electrical current must travel. Ex. 2,
 17 Ex. 2, Schaper Op. Decl. ¶¶ 55, 73; ’730 Patent, 4:37-57. “This significant reduction in the
 18 device resistance ensures that the power device in accordance with the present invention can
 19 sustain higher currents . . . for the same power level (or transistor area) compared to the prior art
 20 arrangements.” ’730 Patent, 4:50-54.

21 STATEMENT OF THE LAW ON CLAIM CONSTRUCTION

22 “It is a bedrock principle of patent law that the claims of a patent define the invention”
 23 and thus the scope of the patentee’s exclusionary rights. *Phillips*, 415 F.3d at 1312 (internal
 24 quotation marks omitted). Therefore, “[i]n construing claims, the analytical focus must begin and
 25 remain centered on the language of the claims themselves, for it is that language that the patentee
 26 chose to use to particularly point out and distinctly claim” the invention. *Interactive Gift Exp.,*
 27 *Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001).

28 That claim language is “generally given [its] ordinary and customary meaning as

1 understood by a person of ordinary skill in the art when read in the context of the specification.”
 2 *Thorner v. Sony Computer Entm’t Am.*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). “There are only
 3 two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own
 4 lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the
 5 specification or during prosecution.” *Id.*; *see also Toshiba Corp. v. Imation Corp.*, 681 F.3d
 6 1358, 1369 (Fed. Cir. 2012) (“Absent disclaimer or lexicography, the plain meaning of the claim
 7 controls.”).

8 The standards that trigger these exceptions are exacting: a disclaimer of claim scope must
 9 be “clear and unmistakable.” *Thorner*, 669 F.3d at 1366-67; *see also Teleflex, Inc. v. Ficosa N.*
 10 *Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002) (“The patentee may demonstrate an intent to
 11 deviate from the ordinary and accustomed meaning of a claim term by including in the
 12 specification **expressions of manifest exclusion or restriction, representing a clear disavowal**
 13 **of claim scope.**” (emphasis added)). Mere criticism of a particular embodiment that falls within
 14 the plain meaning of a claim term does not suffice. *Epistar Corp. v. Int'l Trade Comm'n*, 566
 15 F.3d 1321, 1335 (Fed. Cir. 2009). “It is likewise not enough that the only embodiments, or all of
 16 the embodiments, contain a particular limitation.” *Thorner*, 669 F.3d at 1366.

17 Features of particular embodiments described in the specification therefore may not
 18 simply be imported into the claims. *See Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341,
 19 1347-48 (Fed. Cir. 2009) (“The patentee is entitled to the full scope of his claims, and we will not
 20 limit him to his preferred embodiment or import a limitation from the specification into the
 21 claims.”); *Woods v. DeAngelo Marine Exhaust, Inc.*, 692 F.3d 1272, 1283 (Fed. Cir. 2012) (“The
 22 specification need not describe every embodiment of the claimed invention, and the claims should
 23 not be confined to the disclosed embodiments—even when the specification discloses only one
 24 embodiment[.]”).

25 In short, the “claims, not specification embodiments, define the scope of patent protection
 26 *Kara Tech. Inc.*, 582 F.3d at 1347:9-13. “The patentee is free to choose a broad term and expect
 27 to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines
 28 the term or disavows its full scope.” *Thorner*, 669 F.3d at 1367.

VOLTERRA'S EXPERT TESTIMONY

As discussed above, the intrinsic evidence—especially the words of the claims themselves—is paramount in claim construction. *See Kara Tech. Inc.*, 582 F.3d at 1348 (“[T]he intrinsic evidence and particularly the claim language are the primary resources. . . .”). Extrinsic evidence, such as expert testimony, is generally “less reliable than the patent and its prosecution history in determining how to read claim terms.” *Phillips*, 415 F.3d at 1318. For that reason, where the intrinsic evidence “unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996).

Crucially, expert testimony “may never be relied upon . . . to vary or contradict the clear meaning of terms in the claims.” *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003). Yet this is precisely what Volterra attempts to achieve through the testimony of Dr. Thomas Szepesi. As discussed in more detail in the following pages, Dr. Szepesi’s restrictive reading of the straightforward terms at issue in this case is contrary to the plain meaning of those terms and their usage in the patent claims and the specification. Indeed, for many of the terms, Dr. Szepesi’s opinions are inconsistent even with Volterra’s own proposed constructions. The Court should accord no weight to self-serving testimony that attempts to rewrite the patent claims so that Volterra can escape liability for infringement. *See DESA IP, LLC v. EML Technologies, LLC*, 211 F. App’x 932, 936 (Fed. Cir. 2007) (unpublished) (expert testimony in conflict with intrinsic evidence should be “accorded no weight”).

In addition, Dr. Szepesi is not qualified to offer opinions on electronic packaging technology, which is the primary focus of the '730 Patent. Ex. 3, Schaper Reb. Decl. ¶ 3-10. By his own admission, Dr. Szepesi is "not an expert in packaging technology." Ex. 7, Szepesi Sept. 17, 2009 Tr. at 436:19-20. Dr. Szepesi's expertise lies in designing integrated circuits as opposed to packaging, as reflected in his CV and prior testimony. Ex. 8, Szepesi July 30, 2009 Tr. 23:19-20 ("I'm an expert inasmuch, as a circuit designer, that's my main experience, circuit design."); Ex. 3, Schaper Reb. Decl. ¶ 4. He never worked as a packaging engineer and has never designed a package for an integrated circuit. *Id.* ¶ 5-6. As such, he fails to qualify as even a person of

1 ordinary skill in the relevant art for the '730 Patent, much less as an expert in that field.¹ Ex. 2,
 2 Schaper Op. Decl. ¶ 14; Ex. 3, Schaper Reb. Decl. ¶ 3.

3 ARGUMENT

4 I. "metal conductors"

5 Infineon's Proposed Construction	6 Volterra's Proposed Construction
plain and ordinary meaning	a first/second part of the final metal layer

7 A. The term "metal conductor" does not require construction because the term 8 should be given its plain and ordinary meaning—a metal that conducts.

9 Claim terms are given their ordinary and customary meaning to one skilled in the art
 10 unless the patentee explicitly redefines the term in the specification or clearly disavows the full
 11 scope of the term's plain meaning. *Thorner*, 669 F.3d at 1365. Because neither exception applies
 12 here, the term "metal conductor" should be given its plain meaning.

13 In the context of the '730 Patent, the plain meaning of "metal conductor" is a metal that
 14 conducts electricity. Ex. 2, Schaper Op. Decl. ¶¶ 92-93. Both sides agree that "metal" is a well-
 15 understood term, requiring no further explanation by way of a construction.² Both sides agree
 16 that a conductor is something that permits an electric current to flow. *Id.* ¶ 92; Ex. 6, Szepesi
 17 March 24, 2014 Tr. at 53:20-55:23. Although the Court could construe "metal conductor" to
 18 mean "a metal that permits an electric current to flow," no such construction is necessary because
 19 this plain meaning is clear from the claim term itself.

20 Volterra cannot show that either of the two exceptions to plain meaning apply in this case.
 21 First, it is undisputed that the patentee did not act as his own lexicographer by setting out a
 22 different definition of metal conductor. Ex. 3, Schaper Reb. Decl. ¶¶ 54-55; Ex. 6 at 290:12-
 23 292:12. Second, the patentees did not disavow the full scope of the claim term either in the
 24 specification or during prosecution. Ex. 3, Schaper Reb. Decl. ¶ 56. By its own terms, a "metal

25 ¹ By contrast, Infineon's technical expert Dr. Leonard Schaper's area of expertise is electronic
 26 packaging. Ex. 2, Schaper Op. Decl. ¶ 7. He has 34 years of experience in the field of electronic
 27 packaging, has taught graduate courses in electronic packaging, and has contributed chapters to
 28 two graduate-level electronic packaging textbooks. *Id.* ¶¶ 7-8. He is also a named inventor on
 numerous patents in the field of electronic packaging, and has received awards from several
 leading professional organizations for his contributions to that field. *Id.* ¶¶ 9-11, 17, 25.

² Volterra's construction simply incorporates the term "metal" rather than define its meaning.

1 conductor" is made of metal. The '730 Patent does not limit a "metal conductor" to any specific
 2 type of metal. Ex. 2, Schaper Op. Decl. ¶ 93. Similarly, the '730 Patent does not limit a metal
 3 conductor by its shape or size. *Id.* Nor does the '730 Patent limit a metal conductor based on a
 4 method of manufacture. *Id.* Thus, a metal conductor may be composed of any type of metal or
 5 combinations of metal, in any shape or size, and it may be made using any suitable method of
 6 manufacture. *Id.*

7 **B. Volterra's proposed construction should be rejected because it improperly
 8 imports limitations inconsistent with the plain meaning of "metal conductor."**

9 Volterra's proposed construction improperly imports two limitations into the claims.
 10 First, Volterra's construction requires that a metal conductor be a "layer." Second, Volterra's
 11 construction requires that the first and second metal conductors be parts of the same layer.

12 Volterra's construction improperly confines "metal conductor" to one particular
 13 structure—a "layer." Volterra's Dr. Szepesi describes a layer as a "thin film-like structure." Ex.
 14 6 at 67:24-69:4; Ex. 9 at 35; Ex. 3, Schaper Reb. Decl. ¶ 70. Contrary to Volterra's construction,
 15 Claim 1 is not limited to a layer; it is written more broadly. The patentees chose the claim term
 16 "conductor," which encompasses structures of a variety of shapes and sizes. Ex. 2, Schaper Op.
 17 Decl. ¶ 95. Dr. Szepesi implicitly recognizes the breadth of the term when he opines that "metal
 18 conductors in power semiconductor devices are **typically** formed as part of a metal layer." Ex. 5,
 19 Ex. 5, Szepesi Reb. Decl. ¶ 26 (emphasis added). Thus, the claim term "metal conductors"
 20 encompasses structures other than layers.

21 The specification of the '730 Patent does not redefine "metal conductor" as limited to thin
 22 film-like structures, or any other particular shape or size. Although the specification describes a
 23 particular embodiment (Figure 6) in which one metal conductor is made from a metal layer ('730
 24 Patent at 4:20-22), that one embodiment is not sufficient to limit the patentees' broader claim
 25 term "conductor" to a layer. Volterra cannot overcome the plain meaning of "metal conductor"
 26 by pointing to an embodiment disclosed in the specification. *Toshiba Corp.*, 681 at 1369 (Fed.
 27 Cir. 2012). The Federal Circuit has held that even if every embodiment contains a particular
 28 features, the claims may be broader, such that the feature is not required. *Woods*, 692 F.3d at

1 1283 (Fed. Cir. 2012) (“The specification need not describe every embodiment of the claimed
 2 invention, and the claims should not be confined to the disclosed embodiments—even when the
 3 specification discloses only one embodiment.” (internal citations omitted)); *Thorner*, 669 F.3d at
 4 1366. Volterra’s proposed construction is thus unduly narrow.

5 Similarly, the specification does not support Volterra’s proposition that the metal
 6 conductors must be parts of the same metal layer. Ex. 2, Schaper Op. Decl. ¶ 98. In this case,
 7 Volterra cannot cite to any intrinsic evidence in support of this limitation. With reference to
 8 Figure 6, the specification describes the formation of a single metal conductor. The specification
 9 does not state or even suggest that the two metal conductors connected to the source and drain
 10 regions must be parts of the same layer, much less explicitly redefine or clearly disclaim the
 11 scope of “metal conductor” to necessitate such a requirement.

12 **C. Dr. Szepesi’s additional limitations should be rejected because they are
 13 inconsistent with the ‘730 Patent and both sides’ proposed constructions.**

14 Volterra’s Dr. Szepesi proposes additional, unsupported limitations. For example, Dr.
 15 Szepesi proposes that the metal conductor must be composed of aluminum or an aluminum alloy
 16 and that the metal conductors cannot include any under-bump metallization (UBM). Ex. 3,
 17 Schaper Reb. Decl. at ¶¶ 61-62. Apparently, Volterra rejects these limitations because it did not
 18 incorporate them in its proposed construction. The Court should likewise reject these
 19 unsupported limitations.

20 **1. The metal conductors are not limited to aluminum.**

21 Dr. Szepesi wrongly contends that Claim 1 requires that the metal conductors be
 22 composed of aluminum or an aluminum alloy. His conclusion is inconsistent with the plain and
 23 ordinary meaning of the claims. The patentees claimed a “metal” conductor as opposed to an
 24 “aluminum” conductor. Ex. 3, Schaper Reb. Decl. at ¶ 63. The patentee did not include in Claim
 25 1 any limitation requiring that the metal conductors be composed of aluminum, an aluminum
 26 alloy, or any other particular type of metal. Instead, the patentee broadly claimed the metal
 27 conductors to encompass any type of metal. *Id.*; *see Thorner*, 669 F.3d at 1367 (“The patentee is
 28 free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning

1 unless the patentee explicitly redefines the term or disavows its full scope.”).

2 The specification does not redefine “metal conductor” to mean aluminum and does not
 3 include any clear disclaimer requiring that the metal conductors be composed of aluminum. The
 4 specification does not describe the metal conductors as made of any particular type of metal.³ Ex.
 5 6 at 80:23-82:24. Thus, there is no basis for limiting the metal conductors to any particular type
 6 of metal as Dr. Szepesi proposes.⁴ Ex. 3, Schaper Reb. Decl. ¶ 64.

7 Dr. Szepesi wrongly contends that the absence of a specific disclosure justifies limiting
 8 the claim to what he variously describes as standard, typical, traditional, or usual fabrication
 9 processes.⁵ Ex. 4, Ex. 4, Szepesi Op. Decl. ¶ 33-34. The ’730 Patent “did not explicitly limit the
 10 disputed claim language to technologies that were ‘conventional’ at the time of the invention.”
 11 *See Superguide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 878-80 (Fed. Cir. 2004) (rejecting
 12 argument that “regularly received television signal” was limited to the analog signals that were
 13 the dominant format at the time of the invention). Because Claim 1 recites “metal conductor”
 14 without limiting it to specific types of metal, the term should be construed to cover all known
 15 types of metal. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (“[I]f
 16 an apparatus claim recites a general structure without limiting that structure to a specific subset of
 17 structures, we will generally construe the term to cover all known types of that structure that the
 18 patent disclosure supports.”) (internal quotation marks omitted)).

19 Moreover, it is undisputed that those skilled in the art knew of metal conductors in
 20 integrated circuits made of metals other than aluminum. Dr. Szepesi relies on various prior art
 21 textbooks describing aluminum as the “traditional,” “typical,” “usual,” or “preferred” metal used in

22 ³ Dr. Szepesi initially testified that he did not recall whether the specification describes the metal
 23 conductor as made of aluminum. Ex. 6 at 80:23-81:3. Later, he admitted that the specification
 24 does not specify aluminum or any other type of metal (81:14-15, 82:18-21) and even purported to
 25 have relied on this absence of disclosure to limit the claims to aluminum (81:15-18, 82:21-24).

26 ⁴ Dr. Szepesi testified that the ’730 Patent’s broad description of “metal” bumps encompasses
 27 different types of metals, including those not expressly described in the specification, such as
 28 gold. Ex. 6 at 26:14-28:9. Applying this same logic to metal conductors, the term “metal
 conductor” should be interpreted to encompass different types of metals.

⁵ There is no basis to limit Claim 1 to any particular fabrication process, much less a
 “conventional” or “typical” one. As Dr. Szepesi admits, Claim 1 is directed to a device as
 opposed to a method of manufacture; Claim 1 does not include any limitations directed to how
 the device is made. Ex. 6 at 78:22-79:20.

1 “most” integrated circuits. Ex. 4, Szepesi Op. Decl. ¶ 34. These descriptions themselves show
 2 that those skilled in the art knew that other types of metal could be used and were used in
 3 integrated circuits. Ex. 3, Schaper Reb. Decl. ¶ 65; Ex. 6 at 193:7-199:24. Moreover, Dr. Szepesi
 4 admitted that those skilled in the art in 1996 and 1997 knew of redistribution layers (or RDLs).
 5 Ex. 6 at 69:18-23; 70:12-23, 143:21-24. He further acknowledged that RDLs were usually made
 6 of copper, chromium, and gold (*id.* at 141:16-142:9), and these different metal types constitute a
 7 single metal layer (*id.* at 142:20-143:8). In addition, Dr. Szepesi admitted that persons skilled in
 8 the art in 1996 and 1997 would have known of UBM, which is a metal layer composed of two or
 9 three types of metal and that it can be used as an interface with aluminum or other types of
 10 metals. *Id.* at 71:17-72:7; 98:13-100:8. He even testified that it was typical to use UBM between
 11 aluminum metal pads and solder bumps. *Id.* at 42:1-8.

12 Thus, those skilled in the art knew that metal conductors in integrated circuit could and
 13 did include many different type of metals. Because the patentees broadly claimed “metal
 14 conductors,” rather than “aluminum conductors,” the term should not be limited to aluminum as
 15 Dr. Szepesi proposes. *See Kara Tech. Inc.*, 582 F.3d at 1348 (expert testimony “cannot overcome
 16 the plain language of the claims”).

17 **2. The patentees did not disclaim any portion of the plain meaning of
 18 “metal conductor” and certainly did not disclaim the use of UBM.**

19 Volterra’s Dr. Szepesi testifies that the ‘730 Sicard Patent “teaches against” UBM and that
 20 the claims of a patent cannot cover things its specification “teaches against.” Ex. 5, Szepesi Reb.
 21 Decl. ¶ 41; Ex. 6 at 141:5-7. Dr. Szepesi’s testimony reveals his fundamental misunderstanding
 22 of the proper legal standard for determining whether there is a disclaimer of claim scope. The
 23 phrase “teaching against” relates to assessing the validity of a patent based on the teachings of the
 24 prior art. “A [prior art] reference that properly teaches away can preclude a determination that the
 25 reference renders a claim obvious.” *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012).
 26 Limiting the scope of the plain meaning of a claim term, by contrast, requires a “clear and
 27 unmistakable disclaimer” using “expressions of manifest exclusion or restriction.” *Thorner*, 669
 28 F.3d at 1366-67. As the Federal Circuit has explained, merely “teaching against” a technique is

1 not the same as disclaiming it: “A patentee’s discussion of the shortcomings of certain techniques
 2 is not a disavowal of the use of those techniques in a manner consistent with the claimed
 3 invention.”⁶ *Epistar Corp.*, 566 F.3d at 1335.

4 Under the correct legal standard, the patentee did not disavow or disclaim any part of the
 5 plain meaning of “metal conductor.” In the background of the invention, the specification
 6 describes two prior art solutions intended to reduce the resistance of a power device, along with
 7 some of their disadvantages: (1) one solution involving the use of multiple parallel wires (‘730
 8 Patent at 1:32-47) and (2) the other solution involving the use of a thick copper layer and thick
 9 aluminum wires (*Id.* at 1:48-52). The patentees criticized the second solution because the
 10 deposition of the thick copper layer increases the complexity, cycle time, and cost of the
 11 manufacturing process. *Id.* at 1:52-55. That criticism of the prior solution does not meet the
 12 “exacting standard” required to disclaim claim scope: “clear and unmistakable disclaimer.” *See*
 13 *Thorner*, 669 F.3d at 1366-67 (“Mere criticism of a particular embodiment encompassed in the
 14 plain meaning of a claim term is not sufficient to rise to the level of clear disavowal.”).

15 The background discussion is not an attempt to show that the invention is patentably
 16 distinct from the prior solutions. Ex. 3, Schaper Reb. Decl. ¶¶ 14, 66. Indeed, it is readily
 17 apparent that those prior solutions are different from the invention because they involve wire-
 18 bond interconnections as opposed to “bumps.” *Id.* As such, those solutions would not even fall
 19 within the scope of the claims of the ’730 Patent. The patentees therefore had no need to rely on
 20 the thick copper metal layer to distinguish their invention from those solutions. Rather, in the
 21 background, the patentees simply identified some disadvantages of prior solutions. *Id.* That the
 22 deposition of a thick copper metal layers has some disadvantages in the context of a prior solution
 23 does not mean that the patentees expressly disavowed any and all use of copper metal layers in
 24 conjunction with the bump-type interconnects of the claimed invention.

25
 26 ⁶ Because teaching against is not the same as disclaimer, Judge Spero’s invalidity ruling cited by
 27 Dr. Szepesi (Ex. 5, Szepesi Reb. Decl. ¶42) does not speak to the relevant legal question.
 28 Moreover, Judge Spero’s ruling was based on one side’s failure to present any contrary evidence
 rather than a substantive analysis of two sides’ evidence and argument. Ex. 10 at 72
 (“Defendants do not challenge Dr. Szepesi’s opinion that . . . use of a UBM layer would have
 been inconsistent with an important benefit of Sicard’s invention . . .”).

1 Likewise, the specification's teaching that the present invention "does not require" the
 2 third thick metal deposition process described in the background of the invention ('730 Patent at
 3 5:1-3) by no means clearly disclaims such a process. Stating that a particular process is not
 4 required by the invention is very different than forbidding its use in conjunction with the
 5 invention. Ex. 3, Schaper Reb. Decl. ¶¶ 15, 67. In other words, the third metal deposition
 6 process is optional; the invention can be made either using that process or without using that
 7 process. *Id.* That this metal deposition process is optional rather than required is merely a
 8 potential advantage of the invention over the prior solution involving the thick aluminum wire.
 9 But potential advantages are not claim limitations. *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d
 10 1364, 1370 (Fed. Cir. 2003) ("The court's task is not to limit claim language to exclude particular
 11 devices because they do not serve a perceived 'purpose' of the invention.").

12 In short, the specification's discussion of a prior solution does not clearly and
 13 unmistakably disclaim any of the full scope of metal conductor's plain meaning—not the use of a
 14 thick copper layer, and certainly not UBM as Dr. Szepesi contends. Ex. 3, Schaper Reb. Decl.
 15 ¶ 16. In fact, as Dr. Szepesi admits, the '730 Patent does not mention or describe UBM at all.
 16 Ex. 6 at 98:18-19, 99:1-3, 103:6, 110:9-10. Dr. Szepesi further admits that the thick copper layer
 17 discussed in the background is not a UBM, which has an entirely different structure and function.
 18 Ex. 6 at 106:3-25; *see also id.* at 107:1-110:14; Ex. 3, Schaper Reb. Decl. ¶¶ 17-23, 68
 19 Nevertheless, he relies on the discussion of the disadvantages of the thick copper layer (increased
 20 cycle time, complexity, and costs of manufacture) to conclude that the patentee disclaimed the
 21 use of any and all structures that might share similar disadvantages, including, in his view, UBM.
 22 Ex. 6 at 103:3-106:2, 110:16-111:6; Ex. 5, Szepesi Reb. Decl. ¶ 41. During his deposition, he
 23 even suggested that it would be necessary to calculate the time and cost of particular processes
 24 and compare them against the disclosed embodiment to determine on a case-by-case basis
 25 whether they were within the scope of the claim.⁷ The tortured logic required to reach Dr.

26

⁷ Dr. Szepesi initially testified that Claim 1 is not limited to a two-layer device as shown in Figure
 27 6 but may encompass a device having any number of layers, including even a ten-layer device.
 28 Ex. 6 at 89:12-94:1. These multi-layer devices, however, would have the same disadvantages
 (increased cycle time, complexity, and costs of manufacture) on which Dr. Szepesi relies to argue
 that a metal conductor in Claim 1 cannot encompass a UBM. When confronted with this

1 Szepesi's conclusion belies any argument that this supposed "disclaimer" could possibly be "clear
 2 and unmistakable," especially given the ill-defined range of structures that Dr. Szepesi seeks to
 3 exclude from the claim.

4 Dr. Szepesi's argument is nothing more than a thinly veiled attempt to write certain
 5 potential objectives or advantages of the invention into the claims. That approach to claim
 6 construction is wrong. "An invention may possess a number of advantages or purposes, and there
 7 is no requirement that every claim directed to that invention be limited to encompass all of them."
 8 *E-Pass*, 343 F.3d at 1370; *see also Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 832
 9 (Fed. Cir. 2003) (criticizing district court for relying on expert testimony to "limit claim scope
 10 based on the purpose of the invention, which is impermissible"). Dr. Szepesi offers no
 11 justification for saddling the broad term "metal conductors" with the task of fulfilling every
 12 potential advantage described in the specification.

13 The Court should reject Dr. Szepesi's improper attempt to limit "metal conductors" to a
 14 single type of metal and to exclude other structures based on his assessment of their relative
 15 advantages. Neither limitation is required by Volterra's proposed construction, and thus neither is
 16 properly before the Court. And both are inconsistent with the use of the broad term "metal
 17 conductor" in the patent itself, which demonstrates that the term should be given its plain and
 18 ordinary meaning as Infineon contends.

19 **II. "bump"**

20 Infineon's Proposed Construction	21 Volterra's Proposed Construction
22 raised metal contact	23 a raised metal structure formed partially on 24 the final metal layer through an opening of a 25 passivation layer

26 inconsistency, Dr. Szepesi tried to change his prior testimony. Ex. 6 at 111:8-137:15. Dr.
 27 Szepesi was unable to articulate how much cycle time, complexity, and cost is too much to fall
 28 under the claims according to his advantages-based interpretation. He was unable to testify as to
 whether a sixth layer of a six-layer device may be a metal conductor under his construction. Ex.
 6 at 135:4-137:15. He did not know whether such a device would require more or less cycle time
 than a device with a UBM, calling into question his prior definitive statement that the '730 Patent
 teaches against UBM. *Id.* at 137:17-23. In the end, Dr. Szepesi was no longer sure whether the
 '730 Patent teaches against a two-aluminum layer device with a UBM. Ex. 6 at 140:19-23 ("I
 think my answer is . . ." (emphasis added)).

1 **A. The term “bump” should be given its plain and ordinary meaning—a raised**
metal contact.

2 “Bump” is a simple term with a straightforward meaning to a person of ordinary skill in
3 the art. Ex. 2, Schaper Op. Decl. ¶¶ 112-14. Infineon proposes that a bump is a “raised metal
4 contact,” and Volterra’s construction includes substantially similar language, “raised metal
5 structure.” These alternative wordings do not present a significant substantive dispute. Volterra’s
6 Dr. Szepesi admitted that the two sides’ difference was primarily semantic and that he “would
7 have no arguments against” adoption of that portion of Infineon’s construction. Ex. 6 at 222:22-
8 223:2; 226:10-227:1.

9 As to the parties’ slightly different wording, “contact” better comports with the context of
10 the ’730 Patent and the understanding of a person of ordinary skill in the art. The ’730 Patent
11 describes the “bumps” as providing an electrical connection. *See, e.g.*, ’730 Patent, 3:13-17,
12 4:31-33 (stating that “connection portion 54 [of the frame] is in **contact** with the respective bump
13 or bump 8” (emphasis added)). Volterra’s Dr. Szepesi agreed that the bumps in the ’730 Patent
14 are “contacts.” Ex. 6 at 224:16-18 (“Q: Can you think of any bumps that are not contacts? A: Not
15 in the context of Sicard.”). Moreover, technical literature from 1996 confirms that Infineon’s
16 construction captures the understanding of persons skilled in the art: “Bumping is referred to as
17 the process of adding **raised metal contacts** to bond pads on the die” Ex. 12 at 187
18 (emphasis added); *see also* Ex. 2, Schaper Op. Decl. ¶ 114.

19 **B. Volterra’s proposed construction should be rejected because it improperly**
reads a particular method of manufacture into the claims and is inconsistent
with the plain meaning of “bump.”

21 The parties’ real dispute centers on the additional language in Volterra’s proposed
22 construction, “formed partially on the final metal layer through an opening of a passivation
23 layer.” In the guise of interpreting the straightforward term “bump,” Volterra’s improperly seeks
24 to read into Claim 1 new elements that are not even recited in Claim 1, such as “final metal layer”
25 and “passivation layer.”

26 Volterra’s proposed construction also improperly imports limitations regarding a specific
27 method of manufacture into Claim 1. In support of its construction, Volterra relies on a portion of
28 the specification describing a method of manufacturing a particular LDMOS embodiment of the

1 invention. Ex. 4, Szepesi Op. Decl. ¶ 45 (citing ‘730 Patent at 4:24-28); *see generally* ‘730 Patent
 2 at 4:15-37. Volterra’s Dr. Szepesi admits that the language in the specification and Volterra’s
 3 construction describes the step of creating a bump. Ex. 6 at 213:17-214:11. However, Claim 1 is
 4 directed to a device as opposed to a method of manufacture and does not include any limitations
 5 directed to how the device is made. Ex. 6 at 78:22-79:20. Thus, there is no basis to limit Claim 1
 6 to any particular fabrication process. Ex. 3, Schaper Reb. Decl. ¶ 87 Courts must generally take
 7 care to avoid reading process limitations into an apparatus claim, *see AFG Industries, Inc. v.*
 8 *Cardinal IG Co.*, 375 F.3d 1367, 1372-1373 (Fed. Cir. 2004), because the process by which a
 9 product is made is irrelevant to the question of whether that product infringes a pure apparatus
 10 claim, *see Vanguard Products Corp. v. Parker Hannifin Corp.*, 234 F.3d 1370, 1372 (Fed. Cir.
 11 2001) (“A novel product that meets the criteria of patentability is not limited to the process by
 12 which it was made.”).

13 Moreover, the particular method of manufacture described in Volterra’s proposed
 14 construction is one of many alternative ways of forming bumps, but Volterra has not shown any
 15 explicit redefinition or disclaimer that justifies limiting the plain and ordinary of “bump” to this
 16 particular method of manufacture. The specification of the ‘730 Patent broadly explains that
 17 “each bump 8 is formed of a metal, such as copper, or an alloy, such as an alloy of copper, tin and
 18 lead.” ‘730 Patent, 2:50-52. Yet Volterra’s proposed construction requires that the opening in
 19 the passivation define the bump so that the bump is partially on the metal and partially on the
 20 passivation as shown in the particular embodiment of Figure 6. Ex. 6 at 202:7-23. A person
 21 skilled in the art, however, would have recognized that bumps can be made in many alternative
 22 ways. Ex. 2, Schaper Op. Decl. ¶ 116. For example, gold stud bumps can be formed entirely on
 23 metal, rather than “through an opening of a passivation layer.” *Id.* And some gold stud bumps
 24 may even be formed on top of other gold stud bumps—which is neither on a metal layer nor
 25 through an opening of a passivation layer. *Id.* ¶ 117. Even Volterra’s Dr. Szepesi admits it is
 26 possible to place a bump away from any passivation so that the passivation opening does not form
 27 or define the shape of the bump as required by Volterra’s construction. *Id.* at 202:7-207:3; Ex. 5,
 28 Szepesi Reb. Decl. ¶¶ 55-56; Ex. 3, Schaper Reb. Decl. ¶ 88. Thus, a person of skill in the art

1 would have known that bumps made of metal or metal alloys can be formed in ways other than
 2 “partially on the final metal layer through an opening in the passivation layer,” as Volterra’s
 3 proposed construction mandates.

4 Volterra can identify no reason for departing from the plain and ordinary meaning of
 5 “bump”—a “raised metal contact.” Volterra appears to be relying on the fact that in the example
 6 embodiments depicted in Figures 6 and 7, the bump is formed in an opening of a passivation
 7 layer. Ex. 4, Szepesi Op. Decl. ¶ 45-46. “This is not enough, however, to limit the patentee’s
 8 clear, broader claims.” *Kara Tech. Inc.*, 582 F.3d at 1347-48. Those “claims, not the
 9 specification embodiments, define the scope of patent protection.” *Id.* Given the knowledge of a
 10 person of skill of many different types of “bumps” and the specification’s broad explanation that
 11 the “bumps” can be formed of metal or a metal alloy, Volterra’s attempt to limit “bumps” to the
 12 examples shown in two of the figures runs afoul of well-settled Federal Circuit precedent. *See,*
 13 *e.g., Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1306-07 (Fed. Cir.
 14 2003) (“[T]he mere fact that the patent drawings depict a particular embodiment of the patent
 15 does not operate to limit the claims to that specific configuration.”).

16 In the parties’ prior case, Dr. Szepesi recognized that a claim can be broader than a
 17 disclosed embodiment and most of the time is broader. Ex. 7 at 347:9-13. Now, however, Dr.
 18 Szepesi has changed his testimony (Ex. 6 at 281:2-25) and sought to limit the claim to the
 19 disclosed embodiments (*id.* at 203:17-204:2, 204:8-11). The proper construction is the one that
 20 captures the ordinary meaning of “bump” to those skilled in the art—“raised metal contact.”

21 **C. Dr. Szepesi’s additional limitations should be rejected because they are
 22 inconsistent with the ‘730 Patent and both sides’ proposed constructions.**

23 Volterra’s Dr. Szepesi takes an even narrower view of the claims than Volterra does in its
 24 proposed construction. For example, Dr. Szepesi opines that a “bump” cannot be made of solder.
 25 Ex. 4, Szepesi Op. Decl. ¶ 50. As an initial matter, the Court should reject these additional
 26 restrictions on the claims because Volterra failed to include them in its proposed construction. If
 27 Volterra intended to take the position that “bumps” cannot be made of solder, that should have
 28 been part of its proposed construction.

1 Moreover, Dr. Szepesi’s view that the “bumps” cannot be made of solder is contrary to the
2 teachings of the specification. The specification says that the “bumps” may be formed of metal or
3 a metal alloy. *See* ’730 Patent, 2:50-52. And as Dr. Szepesi admitted at his deposition, solder is a
4 metal alloy. Ex. 6 at 214:13-15. Thus, a person of skill in the art would understand that the
5 specification’s description of a “bump” encompasses solder.⁸ Ex. 3, Schaper Reb. Decl. ¶ 95.
6 Dr. Szepesi’s primary justification for excluding solder—that solder does not form a metallurgical
7 bond with aluminum—rests on his incorrect assumption that the “metal conductors” must be
8 made of aluminum or an aluminum alloy. Ex. 4, Szepesi Op. Decl. ¶ 50. As discussed above in
9 Section I.C.1, however, that is not the case. The patent places no restrictions on the types of
10 metal that may be used to form the “metal conductors.” As such, there is simply no basis for
11 limiting the materials that can be used to form the “bump” to exclude solder, which falls squarely
12 within the express teachings of the patent. Ex. 3, Schaper Reb. Decl. ¶¶ 92-99.

III. "frame"

Infineon's Proposed Construction	Volterra's Proposed Construction
lead frame	a support structure that includes connection portions for connecting to the bumps and other portions for connecting to a PCB

A. The term “frame” should be given its plain and ordinary meaning, which is a lead frame.

The plain meaning of “frame” in the ‘730 Patent is a lead frame. Because the specification repeatedly explains that the “frame” is a “lead frame” (‘730 Patent, 3:17-20, 4:61-62), Volterra does not dispute that the “frame” is a “lead frame.” Ex. 4, Szepesi Op. Decl. ¶ 57; Ex. 5, Szepesi Reb. Decl. ¶ 73; Ex. 6 at 241:22-24 (“Q: Do you agree that the frame recited in claim 1 is a lead frame? A: Yes.”); Ex. 2, Schaper Op. Decl. ¶¶ 99-100; Ex. 3, Schaper Reb. Decl. ¶ 72.

⁸ Indeed, Dr. Szepesi testified in the case before Judge Spero that a person of ordinary skill in the art around the time of the invention would have known that bumps could be formed using solder. Ex. 11, Szepesi Tr. (8/8/2013) at 1110:11-1111:5; *see also* Ex. 3, Schaper Reb. Decl. ¶ 99.

1 “Lead frame” has a well-understood meaning in the art. Ex. 2, Schaper Op. Decl. ¶ 102;
 2 Ex. 3, Schaper Reb. Decl. ¶¶ 73-78. [REDACTED]

3 [REDACTED] *Id; see generally* Ex. 16, Volterra’s Assembly Documents. Thus, there
 4 is no need for any other construction of the term.

5 **B. Volterra’s proposed requirement that the frame include “other portions for
 6 connecting to a PCB” should be rejected because it is inconsistent with the
 claim language and the specification of the ‘730 Patent.**

7 The parties’ main dispute is whether a frame requires “other portions for connecting to a
 8 PCB” as Volterra proposes.⁹

9 **1. Volterra’s construction is inconsistent with Claim 1.**

10 Claim 1 recites that the frame comprises “first connection portions” and “second
 11 connection portions,” but it does not recite that the frame include any so-called “other portions”
 12 as required by Volterra’s construction:

13 a **frame** formed of high conductivity material, the **frame**
 14 comprising a plurality of **first connection portions** for connecting
 15 to the at least one bumps of the first metal conductors and a
 16 plurality of **second connection portions** for connecting to the at
 least one bumps of the second metal conductors, the **frame**
 providing external connections to the semiconductor regions of the
 device.

17 ’730 Patent, 5:24-30 (emphasis added); *see also* Ex. 2, Schaper Op. Decl. ¶ 108; Ex. 6 at 229:10-
 18 18. Claim 1 states that the frame “comprises” first and second connection portions. That means
 19 that the frame optionally **may** include structures other than the recited connection portions, but it
 20 does not **require** any such other structures. *See, e.g., Vivid Techs., Inc. v. Am. Science & Eng’g,
 21 Inc.*, 200 F.3d 795, 811 (Fed. Cir. 1999) (“[C]omprising,’ . . . is generally understood to signify
 22 that the claims do not exclude the presence in the accused apparatus or method of factors in

23
 24 ⁹ The parties also dispute whether the construction of “frame” should include “connection
 25 portions for connecting to the bumps.” Claim 1 expressly recites separate limitations requiring
 26 that the frame include connection portions. These separately recited limitations should not be
 27 duplicated in the construction of “frame” because the plain meaning of “frame” does not require
 28 the connection portions. Ex. 2, Schaper Op. Decl. ¶¶ 104-106. That is precisely why those other
 limitations are recited in the claims. *Id.* at ¶ 107; Ex. 3, Schaper Reb. Decl. ¶ 79. There is no
 need to add redundant language to the construction. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103
 F.3d 1554, 1568 (Fed. Cir. 1997) (Claim construction “is not an obligatory exercise in
 redundancy,” but rather is “a matter of resolution of disputed meanings and technical scope, to
 clarify and when necessary to explain what the patentee covered by the claims.”).

1 addition to those explicitly recited.”).

2 Furthermore, Claim 1 states that the “the frame provides external connections.” Because
 3 **any** portion of the frame may provide the external connections, the claim covers embodiments
 4 where the connection portions of the frame provide external connections, as well as embodiments
 5 where the frame includes other structures that provide external connections. Ex. 3, Schaper Reb.
 6 Decl. ¶ 83. If the patentees had intended to require that “other portions” of the frame **must** be
 7 present and **must** provide the external connections, the patentees would have recited that
 8 additional element. *Id.* Instead, they selected the more general limitation of “the frame providing
 9 external connections.” *Id.* In addition, the claim does not even mention a PCB—yet another
 10 element that Volterra improperly tries to add to the claim through its construction. Ex. 2, Schaper
 11 Op. Decl. ¶¶ 108-109, 111; Ex. 6 at 253:12-24.

12 **2. The specification does not redefine the term “frame” by lexicography
 13 or disclaimer to require “other portions for connecting to a PCB.”**

14 Volterra improperly tries to import into Claim 1 a requirement that the frame include
 15 “other portions for connecting to a PCB.” Volterra cannot identify any intrinsic evidence
 16 showing that the patentees redefined the term “frame” by lexicography or disclaimer to require
 17 “other portions for connecting to a PCB.”

18 First, the specification identifies and describes only the connection portions of the frame.
 19 As both experts recognize, the specification uses the terms “connection portion” and “connecting
 20 portion” interchangeably to refer to the recited connection portions of the frame. Ex. 6 at 232:15-
 21 233:1; Ex. 4, Szepesi Op. Decl. ¶ 65; Schaper Op. Dec. at ¶ 77. In contrast, the specification does
 22 not even describe what Volterra calls the “other portions” of the frame. Ex. 3, Schaper Reb. Decl.
 23 ¶ 84. Nor does the specification use any term or name to refer to these “other portions.” Ex. 6 at
 24 236:15-19; *see generally* 232:15-236:19. The figures include reference numbers for the
 25 connection portions of the frame—but not for what Volterra calls the “other portions” of the
 26 frame. Figure 2 shows part of a frame 14, including first connecting portions 16 and second
 27 connecting portions 18 (having a width 22). Figure 3 shows a frame 3 with first connecting
 28 portions 16 and second connecting portions 18. Szepesi Tr. at 239:17-241:8. Surely if the so-

1 called “other portions” were as critical to the invention as Dr. Szepesi seems to believe, the
 2 patentees would have seen fit to name or describe them.

3 Because the specification does not even name these “other portions,” the specification also
 4 does not ascribe to them the function of connecting to a PCB, as provided in Volterra’s proposed
 5 construction—a fact which Dr. Szepesi admits. Ex. 6 at 236:21-237:11. In fact, the specification
 6 does not require that the power semiconductor device be connected to a PCB **at all**. Dr. Szepesi
 7 admits that the device could be connected to something else entirely, such as a substrate. Ex. 6 at
 8 253:22-24 (“Q: . . . But could the device be connected to something else besides a printed circuit
 9 board? A: Yeah. Could be connected to a substrate.”). The specification even describes
 10 connecting the device to a “final product” (‘730 Patent at 3:27-28), which Dr. Szepesi also
 11 admitted could be something other than a PCB (Ex. 6 at 255:7-256:1).

12 Furthermore, the specification describes the connection portions—not what Volterra calls
 13 the “other portions”—as providing the external connections:

- 14 • “The first 16 and second 18 **connecting portions** provide an external connection to
 the drain and source semiconductor regions respectively.” ‘730 Patent at 3:6-8
 (emphasis added).
- 15 • “The present invention also allows for more efficient heat dissipation through the
 short, relatively large area (compared to wire bonding) bumps bonded directly to the
 sources of the heat on the active face of the device, through the metal intensive
 connecting portions of the frame to the product level printed circuit board.” *Id.* at
 5:4-9 (emphasis added).

16 See also *id.* at Abstract, 1:60-2:5; Ex. 2, Schaper Op. Decl. ¶ 110; Ex. 3, Schaper Reb. Decl.
 17 ¶¶ 84-85.¹⁰

18 Given the teachings of the specification that the “connection portions” can provide the
 19 “external connections” and the broad language used in the claim, Volterra cannot show that the
 20 patentees redefined the term “frame” by lexicography or disclaimer to require “other portions for
 21 connecting to a PCB.”

22
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 24
 25
 26
 27 ¹⁰ Thus, Dr. Szepesi’s opinions are contrary to the specification. See Ex. 4, Szepesi Op. Decl. at
 28 22:26-28 (“[I]t is the other portions of the ‘frame’ not its ‘connection portions’ that provide the
 external connections of the semiconductors regions to the external components e.g. on a PCB.”).

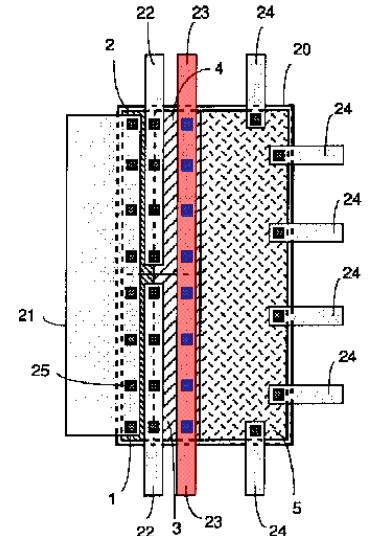
IV. "connection portions"

1 2 3 4	Infineon's Proposed Construction	Volterra's Proposed Construction
	parts of the frame that extend across at least a portion of the die and are spaced apart from one another	portions of the frame for connecting to the bumps

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A. The Court should adopt Infineon's proposed construction of "connection portion" because it is the only proposal that clarifies the scope of the claim.

The parties agree that the connection portions are parts of the frame and extend across a portion of the die, as provided in Infineon's proposed construction. Schaper Decl. ¶¶ 76-79; Ex. 4, Szepesi Op. Decl. ¶ 57. The parties' main dispute relates to the "spaced apart from one another" portion of Infineon's construction. The parties, however, agree on the substantive issue that this language is intended to address.

That substantive issue involves how to distinguish between one connection portion and a plurality of connection portions. This issue arises from one of the alleged prior art references included in Volterra's invalidity contentions, Japanese Patent Publication No. 5-235086. Below is a colorized version of Figure 4 from that Japanese Publication. *See* Ex 13. According to Volterra's translation, this figure illustrates a lead 23 (colored red) and several electrode pads 25 (colored blue). Ex. 14 at 4. Although there is only one lead 23, Volterra appears to take the position that each of the individual electrode pads corresponds to separate "connection portions." Ex. 15 at 24-25, App'x A-2 to Volterra's Invalidity Contentions ("The reference also discloses that there may be a **plurality** of electrode pad regions (or '**connection portions**') for each terminal of the chip." (emphasis added)). Volterra appears to take the position that the single lead 23 can be divided into a plurality of separate connection portions based on the location of electrode pads 25. Ex. 2, Schaper Op. Decl. at ¶¶ 82-84. Contrary to the statement in Volterra's invalidity contentions, this single lead 23 is, at most, one connection portion rather than a plurality of connection portions. It does not make sense to divide the lead



1 into separate “connection portions” based on the location of electrode pads. Ex. 2, Schaper Op.
 2 Decl. at ¶¶ 85-87.

3 Volterra’s Dr. Szepesi agrees with Infineon on the substantive scope of “connection
 4 regions.” He testified that lead 23 is one connection portion rather than a plurality of connection
 5 portions. Ex. 6 at 268:12-24, *see generally id.* at 264:2-269:19. He further testified that it would
 6 not be “logical” to refer to the separate portions of the lead over each of the pads as separate
 7 connection portions. Ex. 6 at 269:1-19; *see also id.* at 259:21-261:23. Thus, the parties appear to
 8 agree as to the substance.

9 The only dispute relates to which side’s construction better captures the parties’
 10 substantive agreement that a structure such as the lead 23 is, at most, a single connection portion
 11 and cannot be divided into separate connection portions. Infineon proposes that the connection
 12 portion must be “spaced apart from one another.” This description is consistent with Figures 2
 13 and 3, which show the connection portions spaced apart from one another. Ex. 2, Schaper Op.
 14 Decl. at ¶ 80. The patent does not contemplate that a connection portion is limited to the metal in
 15 the immediate vicinity of a single bump, instead teaching that one connection portion may be
 16 coupled to several bumps. Ex. 2, Schaper Op. Decl. at ¶¶ 85-87. One connection portion is
 17 distinguished from another not based on where the bumps are located, but based on the fact that
 18 the two are spaced apart, as illustrated in Figures 2 and 3. Ex. 3, Schaper Reb. Decl. ¶¶ 49-50.
 19 Infineon’s construction is necessary to prevent Volterra’s approach of arbitrarily carving a single
 20 lead into multiple alleged “connection portions.”

21 In contrast, Volterra’s construction simply restates what is recited in the claim (‘730
 22 Patent at 5:24-30; Ex. 2, Schaper Op. Decl. ¶ 89) and does not provide any explanation that
 23 clarifies that a single strip of metal (such as lead 23 in the Japanese Publication) constitutes, at
 24 most, a single connection portion and cannot be divided into separate connection portions. Claim
 25 construction “is not an obligatory exercise in redundancy,” but rather is “a matter of resolution of
 26 disputed meanings and technical scope, to **clarify and when necessary to explain** what the
 27 patentee covered by the claims, for use in the determination of infringement.” *U.S. Surgical*
 28 *Corp.*, 103 F.3d at 1568 (emphasis added). Volterra’s Dr. Szepesi even testified, “[M]y

1 understanding is that what's clearly expressed in the claim shouldn't be part of—of the claim
 2 construction. . . . Because . . . you don't need to clarify [or] explain things which are expressly
 3 part of the claim." Ex. 6 at 176:9-15. Volterra's construction provides neither necessary
 4 explanation nor clarity and, therefore, should be rejected.

5 **V. "interdigitated"**

6 Infineon's Proposed Construction	7 Volterra's Proposed Construction
8 alternately arranged in adjacent rows	structures of interlocking fingers

9 Infineon's proposed construction is supported by the intrinsic evidence of the '730 Patent.
 10 The term "interdigitated" appears in Claim 2:

11 A semiconductor power device according to claim 1
 12 wherein the plurality of first metal conductors are **interdigitated**
 13 with the plurality of second metal conductors

14 In this context, the '730 Patent uses the term "interdigitated" to mean alternately arranged in
 15 adjacent rows. With reference to Figure 1, the specification uses those two terms "interdigitated"
 16 and "alternating" interchangeably, and even contrasts "interdigitated" metal conductors with
 17 "non-alternating" conductors:

18 **Alternating** metal conductors 4 and 6 extend over and are coupled
 19 to drain and source semiconductor regions respectively (not shown)
 20 of the LDMOS transistor die. . . . Moreover, instead of having
 21 **alternating or interdigitated** metal conductors 4 and 6, the power
 22 transistor device may have **non-alternating** conductors or even one
 23 drain conductor only and one source conductor only.

24 '730 Patent, 2:46-62 (emphasis added). Thus, the specification treats "interdigitated" and
 25 "alternating" as synonymous. Ex. 2, Schaper Op. Decl. ¶¶ 63, 121-22. And it further
 26 distinguishes both from a "non-alternating" arrangement of the metal conductors. As shown in
 27 Figure 1, the interdigitated metal conductors 4 and 6 are alternately arranged in adjacent rows.

28 In contrast, Volterra's construction appears to be based on a generic dictionary definition
 29 that does not apply to the '730 Patent. It is unclear what "interlocking fingers" means in the
 30 context of the patent. Ex. 2, Schaper Op. Decl. ¶ 124. The patent does not describe or illustrate
 31 metal conductors that form interlocking fingers. *Id.* at ¶ 125. Because it is unclear how this

1 construction even applies in the context of the '730 Patent, Volterra's construction would not help
 2 the jury but likely confuse them.

3 **VI. "bumps on the first metal conductors are substantially aligned in first lines which
 4 extend in a second direction" and "bumps on the second metal conductors are
 substantially aligned in second lines which extend in the second direction"**

5 Infineon's Proposed Construction	6 Volterra's Proposed Construction
7 plain and ordinary meaning, except for "bumps" as addressed separately in this chart	8 two-dimensional pattern of bumps where bumps to be connected to the frame are aligned in a direction different from the first direction

9 **A. The Claim 5 limitations do not require any further construction.**

10 The Claim 5 limitations do not require construction. Neither is given any special meaning
 11 by the specification, and the meaning of the phrases is clear from the context of the claim
 12 language itself. *See Applied Signal Tech., Inc. v. Emerging Mkts. Comm., Inc.*, No. C 09-2180
 13 SBA, 2011 WL 500786, at *2 (N.D. Cal. Feb. 9, 2011) (finding that the "plain and ordinary
 14 meaning applies" to a claim term that "is not used in a special manner by the [patent]" and "could
 15 be understood by a jury without further construction"). "Direction" and "lines" are ordinary
 16 terms that would certainly be familiar to a jury. Most of the other operative terms, such as "metal
 17 conductors" and "bumps," are already before the Court for construction and are addressed above.
 18 No further construction of these phrases is necessary for a jury to understand and apply them.

19 **B. Volterra's proposed construction should be rejected because it incorporates
 20 limitations inconsistent with the claim language and specification.**

21 Volterra's proposed construction is a wholesale rewriting of the claim to include several
 22 new, unsupported requirements, such as a "two-dimensional pattern of bumps" and the
 23 requirement that the second direction is a "direction different from the first direction."

24 First, neither the claim language nor the specification supports a requirement that the
 25 bumps must form a "two-dimensional pattern" of bumps as Volterra proposes. Ex. 2, Schaper
 26 Op. Decl. ¶ 131. Claim 5 does not mention a pattern of bumps, and the specification does not
 27 require that the bumps form any particular pattern. In fact, the specification expressly
 28 contemplates bumps that are not in any particular pattern. For example, Figure 5 shows bumps

1 that “are arranged **randomly** between the metal conductors 4 and 6.” ’730 Patent, 3:57-58
 2 (emphasis added); Ex. 3, Schaper Reb. Decl. ¶ 102. Thus, Volterra’s proposed construction
 3 requiring a “two-dimensional pattern of bumps” would improperly exclude certain disclosed
 4 embodiments, including the one illustrated in Figure 5. *See Vitronics Corp.*, 90 F.3d at 1583-84
 5 (holding that an claim interpretation that would exclude a preferred embodiment described in the
 6 specification is “rarely, if ever, correct.”).

7 Second, neither the claim language nor the specification supports a requirement that the
 8 second direction is a “direction different from the first direction,” as proposed by Volterra. The
 9 mere fact that certain embodiments depict the first and second directions as different directions
 10 does not justify importing that limitation into the claims. Indeed, the specification includes
 11 embodiments in which the first and second directions are the same. Ex. 3, Schaper Reb. Decl.
 12 ¶ 103-105. Here again, Volterra’s proposed construction would improperly exclude these
 13 embodiments.

14 Moreover, the doctrine of claim differentiation counsels against reading into Claim 5 a
 15 requirement that the second direction is a “direction different from the first direction.” The
 16 doctrine of claim differentiation presumes that different claims are intended to have different
 17 focus and scope. *Phillips*, 415 F.3d at 1315 (“[T]he presence of a dependent claim that adds a
 18 particular limitations gives rise to a presumption that the limitation in question is not present in
 19 the independent claim.”). Claim 7, which depends from Claim 5, requires that the second
 20 direction is different from the first direction.¹¹ Ex. 3, Schaper Reb. Decl. ¶¶ 106. Importing this
 21 requirement into Claim 5 as Volterra proposes would result in the two claims having the same
 22 scope. When, as in this case, the relevant limitation is the only meaningful difference between
 23 the two claims, the “doctrine of claim differentiation is at its strongest.” *Liebel-Flarsheim Co. v.*
 24 *Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004). Thus, Volterra’s proposed construction is
 25 presumptively incorrect.

26
 27
 28 ¹¹ Claim 7 states, “the second direction is skewed to the first direction.” In the context of the ’730
 Patent, “skewed” means not parallel. Ex. 3, Schaper Reb. Decl. ¶ 106.

1 **C. Dr. Szepesi's attempt to read into Claim 5 a requirement that the connection**
 2 **portions be aligned in the second direction is improper and inconsistent with**
 3 **both sides' constructions.**

4 As with several other terms, Dr. Szepesi takes an even more restrictive view of the claims
 5 than Volterra does in its proposed construction. Although Claim 5 and Volterra's proposed
 6 construction discuss the alignment of **bumps** in the second direction, Dr. Szepesi opines that the
 7 **connection portions** of the frame must also extend in the second direction. Szepesi Decl. ¶ 76-
 8 81. But Claim 5 does not include any limitation regarding the direction of the connection
 9 portions. Ex. 6 at 272:14-19. In fact, Claim 5 does not mention the connection portions or the
 10 frame at all. Although the specification discusses particular embodiments in which the
 11 connection portions are arranged in certain directions, there is no justification for importing these
 12 limitations into Claim 5, which is silent on this point. If the patentees had intended to limit the
 13 direction of the connection portions, they could have included such limitations.

14 The doctrine of claim differentiation also counsels against Dr. Szepesi's reading into
 15 Claim 5 any requirement regarding the alignment of the connection portions. Other claims limit
 16 the direction of the connection portions, signaling that the patentees knew how to draft limitations
 17 such as the one that Dr. Szepesi proposes. For instance, Claim 9, which depends from Claim 5,
 18 requires that the connection portions extend in the second direction: "each of the first connection
 19 portions for connecting to the bumps arranged in a respective one of the first lines extending in
 20 the second direction and each of the second connection portions for connecting to the bumps
 21 arranged in a respective ones of the second lines extending in the second direction." Claim 9 thus
 22 neatly captures the limitation Dr. Szepesi attempts to read into Claim 5. Ex. 6 at 274:14-275:9.
 23 Under the doctrine of claim differentiation, Dr. Szepesi's attempt to rewrite Claim 5 to include
 24 the limitations of its dependent Claim 9 is presumptively wrong. *See Phillips*, 415 F.3d at 1315.

25 **CONCLUSION**

26 For the foregoing reasons, the Court should adopt Infineon's proposed constructions,
 27 which reflect the plain and ordinary meanings of the disputed claim terms. Volterra's attempts to
 28 use the testimony of its expert and preferred embodiments in the specification to narrow the plain
 language of the claims should be rejected.

1
2 Respectfully submitted,
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4 April 10, 2014
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